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PATENT & TRADEMARK OFFICE

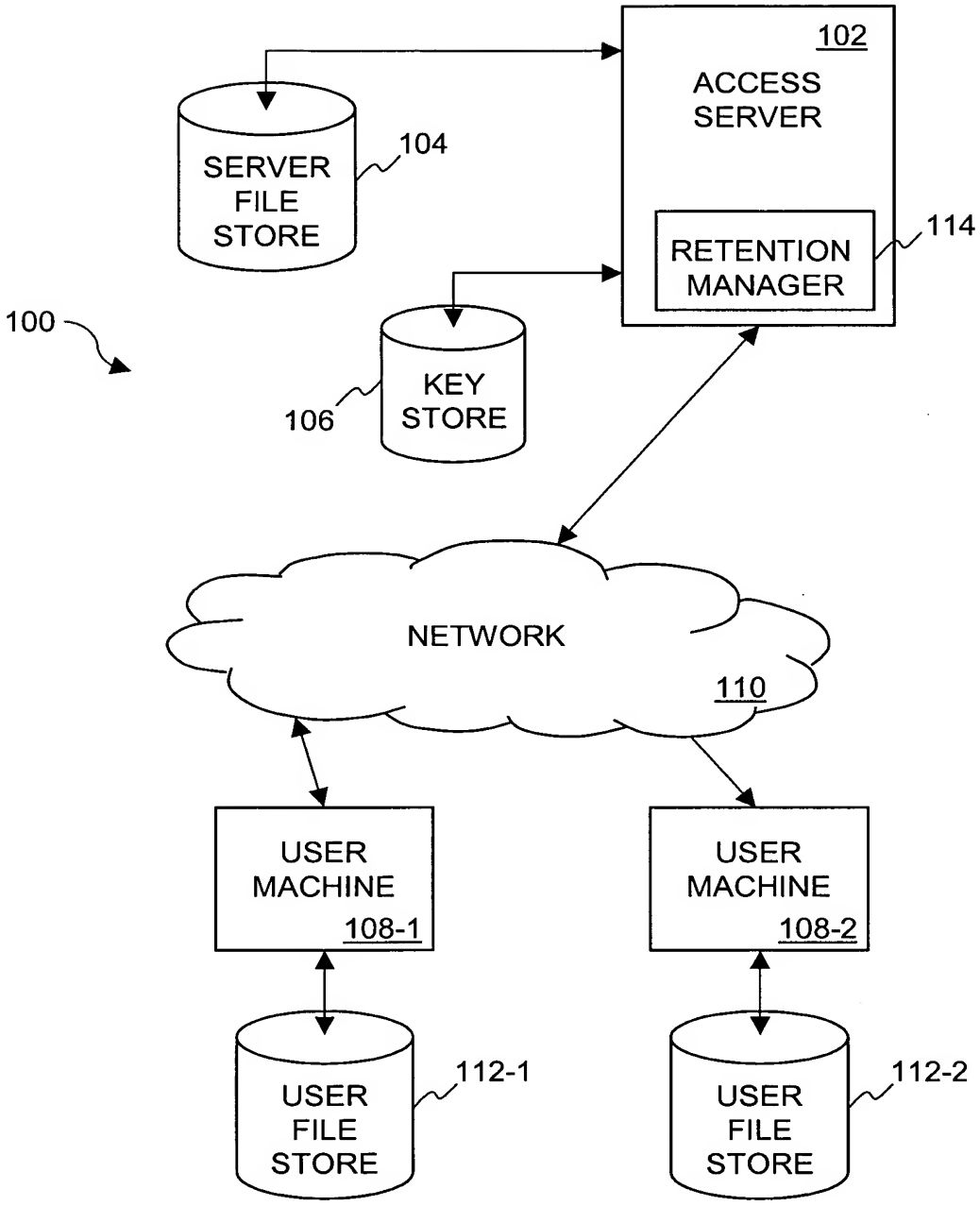

FIG. 1

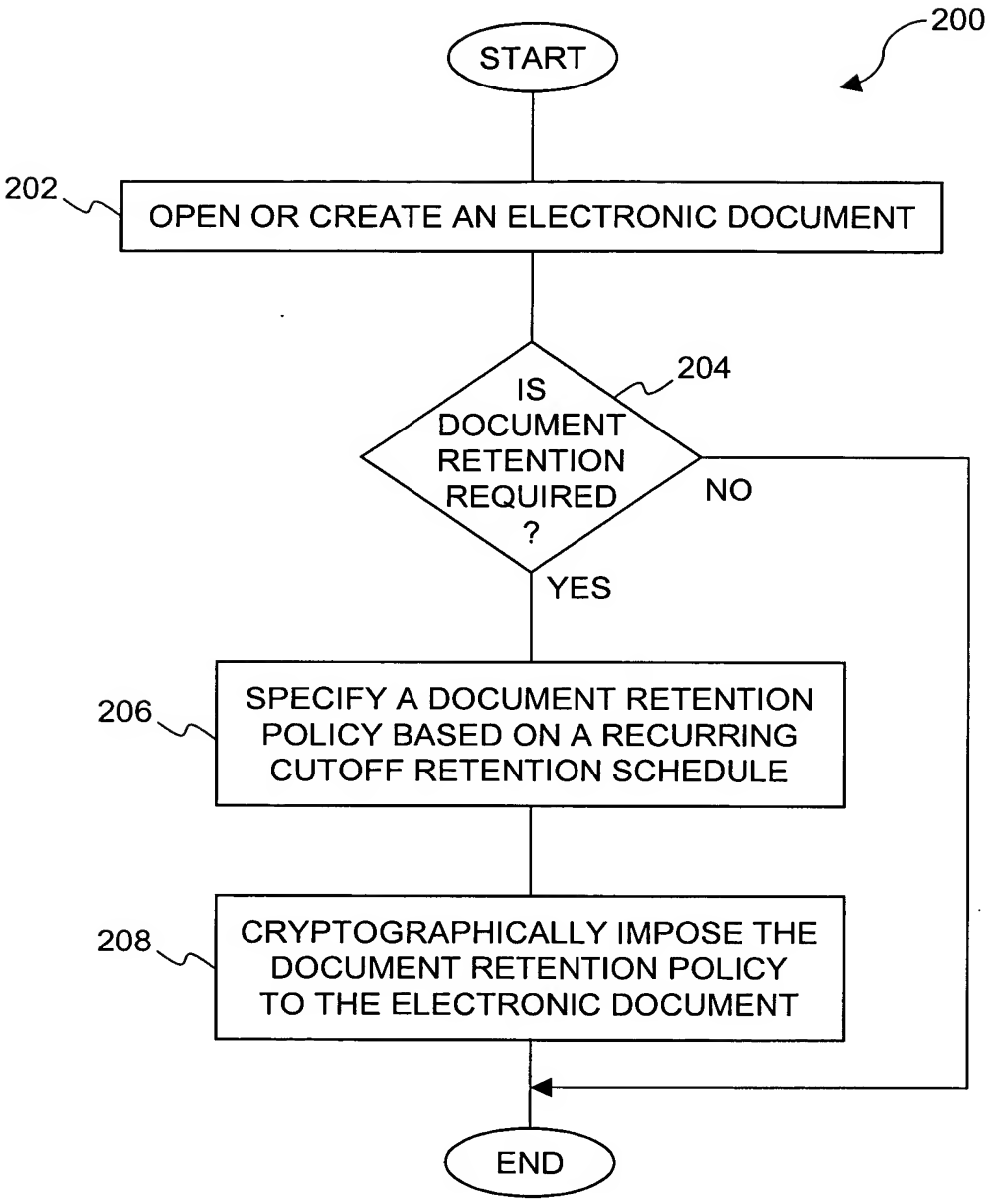
200
START
202
OPEN OR CREATE AN ELECTRONIC DOCUMENT
204
IS DOCUMENT RETENTION REQUIRED ?
NO
YES
206
SPECIFY A DOCUMENT RETENTION POLICY BASED ON A RECURRING CUTOFF RETENTION SCHEDULE
208
CRYPTOGRAPHICALLY IMPOSE THE DOCUMENT RETENTION POLICY TO THE ELECTRONIC DOCUMENT
END

FIG. 2

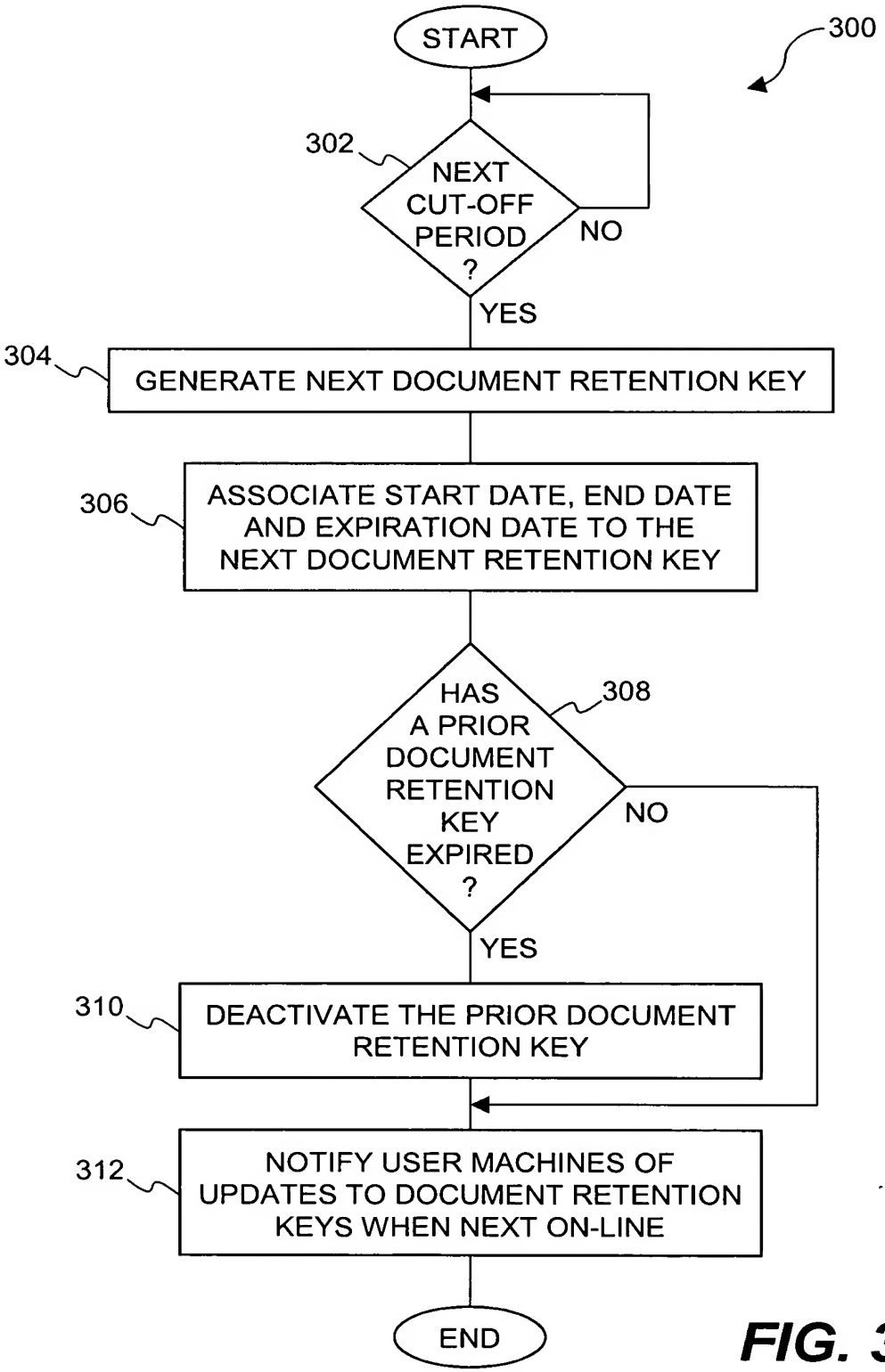
START
300
302
NEXT CUT-OFF PERIOD ?
NO
YES
304
GENERATE NEXT DOCUMENT RETENTION KEY
306
ASSOCIATE START DATE, END DATE AND EXPIRATION DATE TO THE NEXT DOCUMENT RETENTION KEY
HAS A PRIOR DOCUMENT RETENTION KEY EXPIRED ?
308
NO
YES
310
DEACTIVATE THE PRIOR DOCUMENT RETENTION KEY
312
NOTIFY USER MACHINES OF UPDATES TO DOCUMENT RETENTION KEYS WHEN NEXT ON-LINE
END

FIG. 3

400

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
1	K1pub, K1pri	3/1/2004	3/31/2004	8/31/2004
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004

FIG. 4A

402

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
1	K1pub, K1pri	3/1/2004	3/31/2004	8/31/2004
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004
3	K3pub, K3pri	5/1/2004	5/31/2004	10/31/2004

FIG. 4B

404

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
1	K1pub, K1pri	3/1/2004	3/31/2004	8/31/2004
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004
3	K3pub, K3pri	5/1/2004	5/31/2004	10/31/2004
4	K4pub, K4pri	6/1/2004	6/30/2004	11/30/2004

FIG. 4C

406

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
1	K1pub, K1pri	3/1/2004	3/31/2004	8/31/2004
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004
3	K3pub, K3pri	5/1/2004	5/31/2004	10/31/2004
4	K4pub, K4pri	6/1/2004	6/30/2004	11/30/2004
5	K5pub, K5pri	7/1/2004	7/31/2004	12/31/2004

FIG. 4D

408

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
1	K1pub, K1pri	3/1/2004	3/31/2004	8/31/2004
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004
3	K3pub, K3pri	5/1/2004	5/31/2004	10/31/2004
4	K4pub, K4pri	6/1/2004	6/30/2004	11/30/2004
5	K5pub, K5pri	7/1/2004	7/31/2004	12/31/2004
6	K6pub, K6pri	8/1/2004	8/31/2004	1/31/2005

FIG. 4E

410

ID	KEY PAIR	START DATE	END DATE	EXPIRATION DATE
2	K2pub, K2pri	4/1/2004	4/30/2004	9/30/2004
3	K3pub, K3pri	5/1/2004	5/31/2004	10/31/2004
4	K4pub, K4pri	6/1/2004	6/30/2004	11/30/2004
5	K5pub, K5pri	7/1/2004	7/31/2004	12/31/2004
6	K6pub, K6pri	8/1/2004	8/31/2004	1/31/2005
7	K7pub, K7pri	9/1/2004	9/30/2004	2/28/2005

FIG. 4F

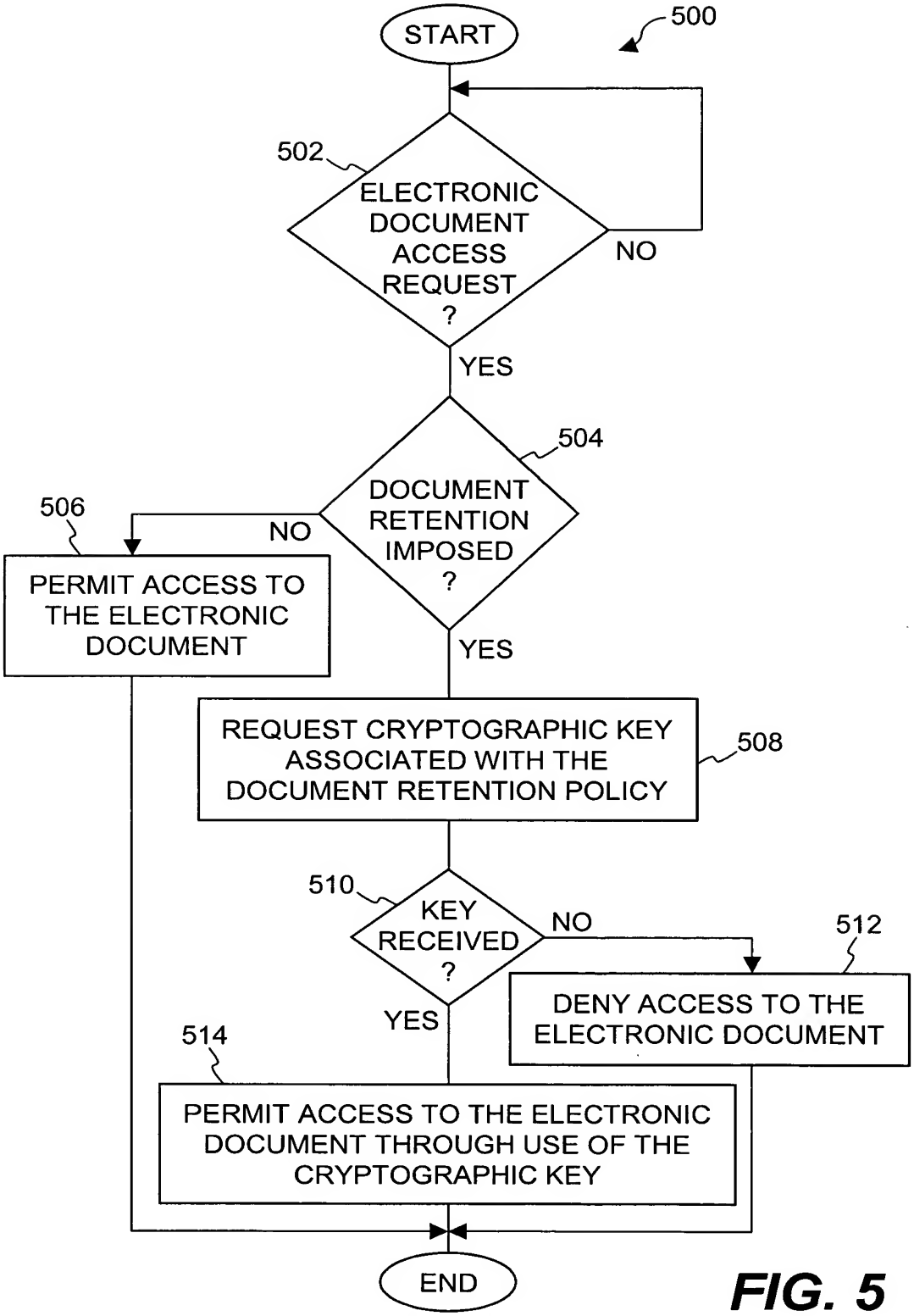
START
500
502
ELECTRONIC DOCUMENT ACCESS REQUEST ?
NO
YES
504
DOCUMENT RETENTION IMPOSED ?
506
NO
PERMIT ACCESS TO THE ELECTRONIC DOCUMENT
YES
REQUEST CRYPTOGRAPHIC KEY ASSOCIATED WITH THE DOCUMENT RETENTION POLICY
508
510
KEY RECEIVED ?
NO
512
DENY ACCESS TO THE ELECTRONIC DOCUMENT
YES
514
PERMIT ACCESS TO THE ELECTRONIC DOCUMENT THROUGH USE OF THE CRYPTOGRAPHIC KEY
END

FIG. 5

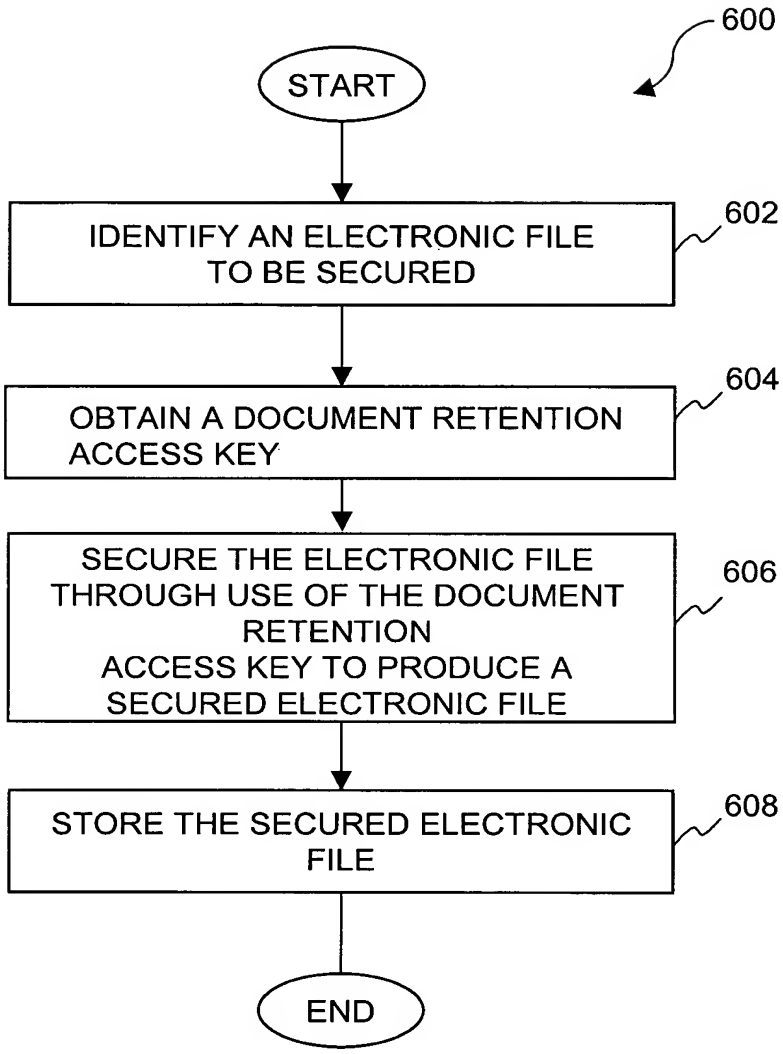
600
START
IDENTIFY AN ELECTRONIC FILE TO BE SECURED
602
OBTAIN A DOCUMENT RETENTION ACCESS KEY
604
SECURE THE ELECTRONIC FILE THROUGH USE OF THE DOCUMENT RETENTION ACCESS KEY TO PRODUCE A SECURED ELECTRONIC FILE
606
STORE THE SECURED ELECTRONIC FILE
608
END

FIG. 6

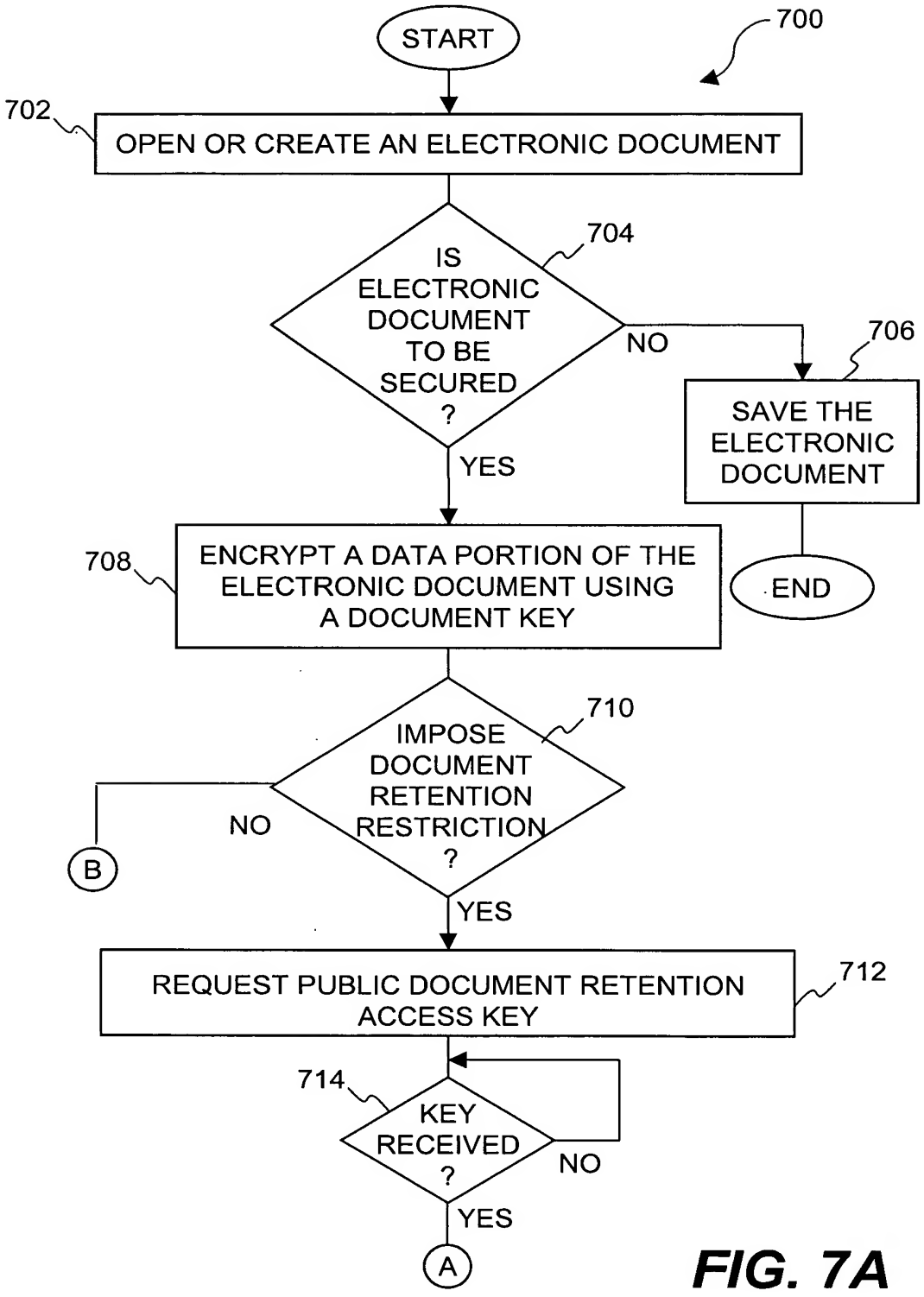
START
700
702
OPEN OR CREATE AN ELECTRONIC DOCUMENT
704
IS ELECTRONIC DOCUMENT TO BE SECURED ?
NO
706
SAVE THE ELECTRONIC DOCUMENT
YES
END
708
ENCRYPT A DATA PORTION OF THE ELECTRONIC DOCUMENT USING A DOCUMENT KEY
710
IMPOSE DOCUMENT RETENTION RESTRICTION ?
NO
B
YES
REQUEST PUBLIC DOCUMENT RETENTION ACCESS KEY
712
714
KEY RECEIVED ?
NO
YES
A

FIG. 7A

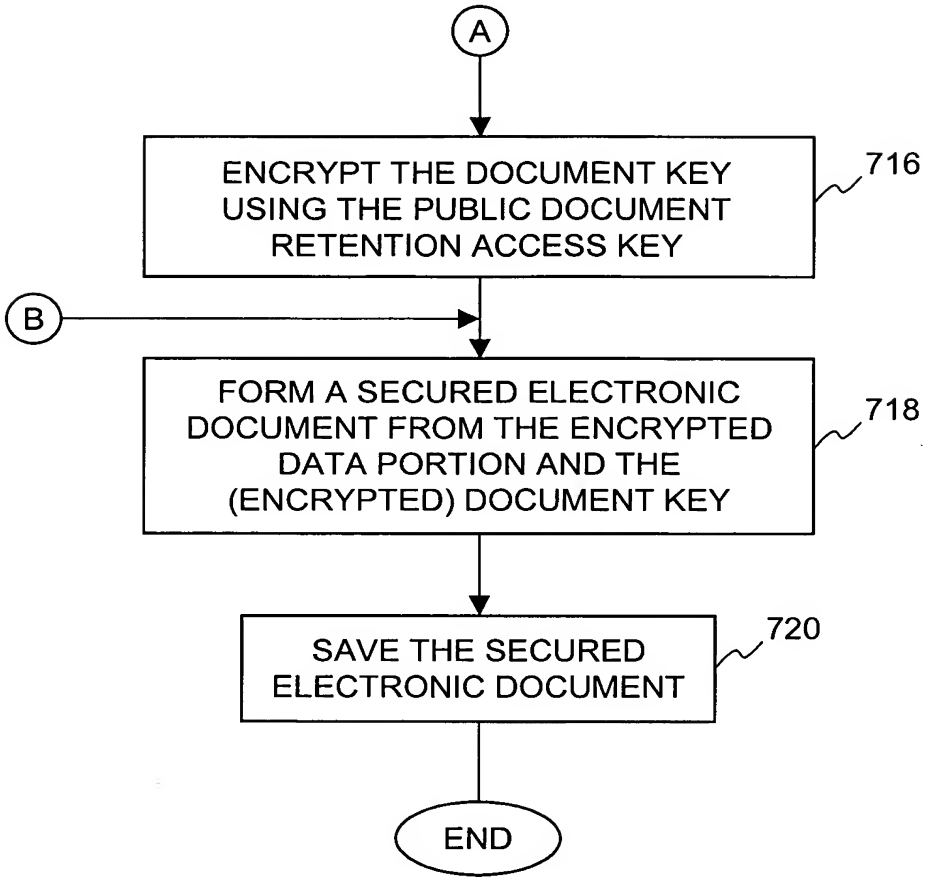
A
ENCRYPT THE DOCUMENT KEY USING THE PUBLIC DOCUMENT RETENTION ACCESS KEY
716
B
FORM A SECURED ELECTRONIC DOCUMENT FROM THE ENCRYPTED DATA PORTION AND THE (ENCRYPTED) DOCUMENT KEY
718
SAVE THE SECURED ELECTRONIC DOCUMENT
720
END

FIG. 7B

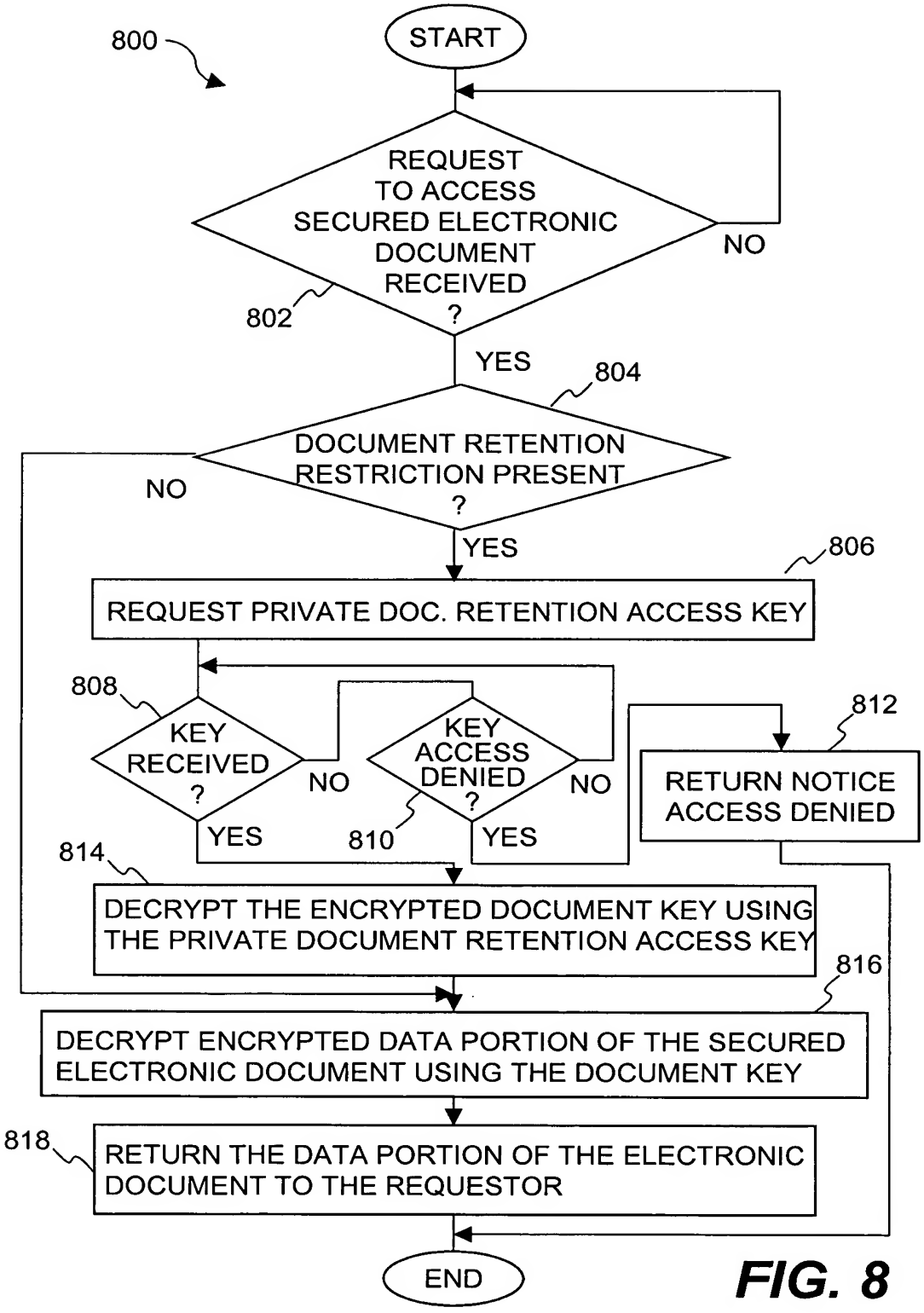
800
START
REQUEST TO ACCESS SECURED ELECTRONIC DOCUMENT RECEIVED ?
802
NO
YES
804
DOCUMENT RETENTION RESTRICTION PRESENT ?
NO
YES
806
REQUEST PRIVATE DOC. RETENTION ACCESS KEY
808
KEY RECEIVED ?
NO
YES
KEY ACCESS DENIED ?
NO
YES
810
812
RETURN NOTICE ACCESS DENIED
814
DECRYPT THE ENCRYPTED DOCUMENT KEY USING THE PRIVATE DOCUMENT RETENTION ACCESS KEY
816
DECRYPT ENCRYPTED DATA PORTION OF THE SECURED ELECTRONIC DOCUMENT USING THE DOCUMENT KEY
818
RETURN THE DATA PORTION OF THE ELECTRONIC DOCUMENT TO THE REQUESTOR
END

FIG. 8

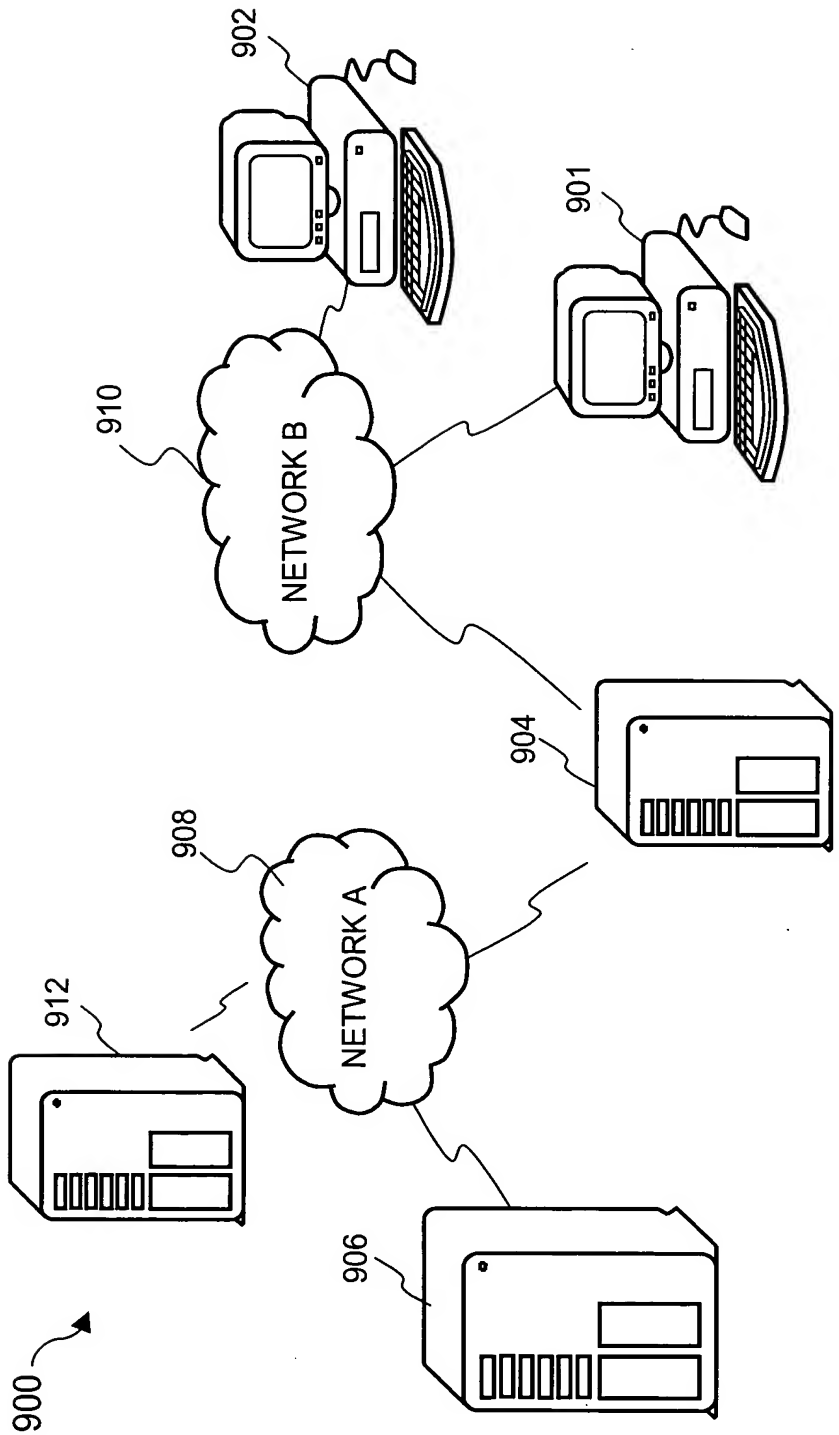

FIG. 9

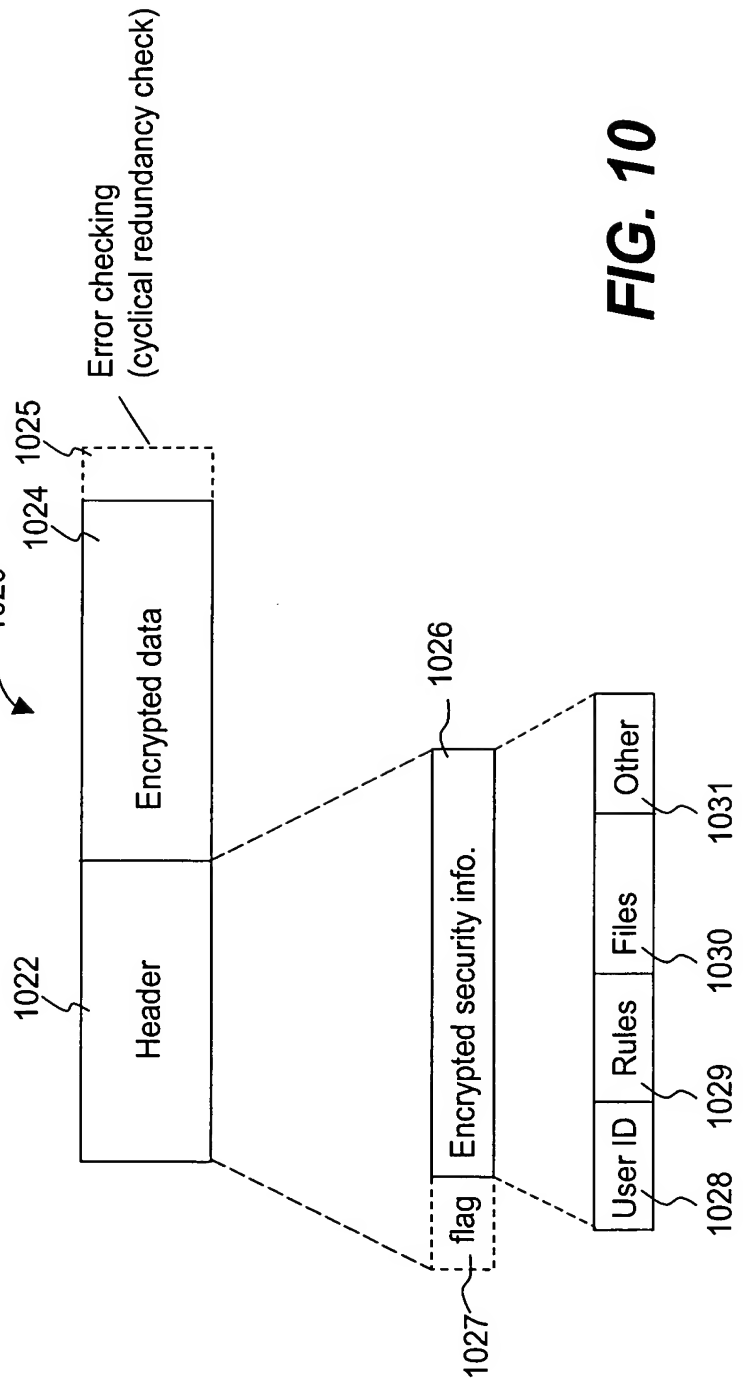
1020
1022
Header
1024
Encrypted data
1025
Error checking
(cyclical redundancy check)
1026
1027
flag
Encrypted security info.
1028
User ID
1029
Rules
1030
Files
1031
Other

FIG. 10